

## **Aerial Photography Acquisition and Processing**

On April 28, 2003, William Frament, USDA Forest Service (Northeastern Area State and Private Forestry, Durham, NH), acquired leaf-off (non-growing season) color infrared (CIR), stereo pair 1:8,000 scale aerial photography of MIMA. The photography was acquired as part of a larger project flown for several eastern national parks at one time, and thus preceded the vegetation classification and mapping project. The photography was captured in late April when deciduous trees were mostly bare and the ground was generally free of snow. The image type consists of a raster 3-band color image. The bands are blue, green, and near infrared. Each pixel contains a value ranging from 0 to 255 per band.

The photos were used by North Carolina State University Center for Earth Observation (NCSU-CEO) to create an orthorectified photomosaic using ER Mapper 6.4 and Earth Resources Data Analysis System (ERDAS) Imagine 8.7 (NCSU-CEO 2004). The photos were scanned at 600 dots per inch (dpi) and imported into Imagine. The 30-m Digital Elevation Model (DEM) USGS National Elevation Dataset (NED) was acquired for the project area and data were transformed from 30 meters to 10 meters to assist with data comparability.

Digital Orthophoto Quarter Quadrangle (DOQQ) images (1:5,000 Color Ortho Imagery, April 2001) were obtained from the Office of Geographic and Environmental Information of the Commonwealth of Massachusetts Executive Office of Environmental Affairs (MassGIS). These were combined to create a single mosaic file for use as ground control. The images were orthorectified in ERDAS Imagine Orthobase software using the DOQQs and the DEM as ground control. Aerial triangulation produced a single root mean square error (RMSE) of less than one meter for the entire block of photos. The orthorectified images were then combined within ER Mapper to form two seamless base images for MIMA. The mosaics were then re-stretched with the polynomial method to the original reference image using ER Mapper with a RMSE of less than 1. The two final mosaics were then mosaicked into one single seamless image. The mosaic was compressed using MrSID software at a 1:20 target compression ratio. Key information for the digital MIMA photomosaic, finalized in November 2004, is summarized in Table 3. FGDC-compliant metadata were also written for the final photomosaic, which was archived at the NPS NETN office in Woodstock, VT.